

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Rajko Milovanovic et al.

Serial No. : 09/843,674

Filed: April 27, 2001

For: Method and System for Video Telephony

Art Unit: 2643

Examiner: George Eng

DECLARATION UNDER 37 C.F.R. § 1.131

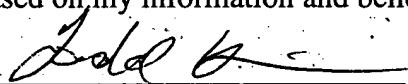
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

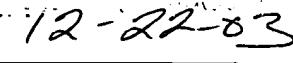
Dear Sir:

INVENTORS declare as follows:

- 1) That we, Rajko Milovanovic and Todd Killian are the inventors of the subject application.
- 2) That the subject matter the examiner relies on in rejecting the claims of the subject application by the published reference WO 00/13417 dated March 9, 2000 was conceived by us in this country (United States of America) prior to March 9, 2000 and is part of our disclosure sent to the Texas Instruments Incorporated before March 9, 2000.
- 3) That a copy of the patent disclosure with the dates blanked out signed by us is enclosed herewith and shows a complete conception of the subject matter prior to March 9, 2000.
- 4) That the description is of the invention was sufficiently specific to enable a person skilled in the art to practice the invention.
- 5) That the subject matter was reviewed by a Texas Instruments Patent Department Review Committee and then assigned to a patent attorney for filing who worked with us on the preparation of a patent application and filed a first patent application in the United States Patent and Trademark Office as a provisional application on June 8, 2000.

I declare under penalty of perjury that the above statements are true and correct based on my information and belief.


Inventor
Todd Killian


date

Signed Original
2975

Patent Disclosure SmartVTCam: Method and Apparatus for Intelligent Acquisition of Participants in a Video-Telephony Session

DESCRIPTION OF THE INVENTION

Consider a living room with several ("our") family members, with a videophone session about to start with another family in their living room. Our TV shows the whole living room, with all of us there. How to tell the camera on top of our TV who to focus on?

Analog steering is too cumbersome – irrespective whether we use a trackball, mouse, or clicks by "screen inch by screen inch up/down/left/right". Instead, we build visual enumeration list of humans, and indicate who to focus on by much more effective (and non-frustrating) "hopping human-to-human" instead. This is done using one of the two algorithms, or using a combination of both:

Algorithm 1 -- BACKGROUND -- This algorithm uses "as is" software in the set-top box (STB) which identifies human faces (as opposed to other segments from the overall camera's bitmap image), and which also identifies locations of faces in the image on the TV screen. This software is as per <http://www.cs.cmu.edu/afs/cs.cmu.edu/user/har/Web/faces.html> (Henry Rowley's face detection thesis).

INNOVATION -- Innovation contained in the algorithm is the following: TI software then prompts us with "Include in video-phone session?", and highlights the face of the person closest to the nominal position in the room (orthogonal to the center of the TV screen plane). By clicking YES (or Enter), holder of the TV remote tells the STB to include that person, and to highlight the next one, again with a prompt. Alternatively, a Next or Arrow key skips the current one and moves the highlight/prompt to the next person. Once a Done (or Escape) key is pressed, the selection of participants is finished, and the camera adjusts (zoom, pan, tilt) to include only chosen persons. The set of participants can be changed/enlarged/cut down at any time during the videophone session.

Algorithm 2 -- BACKGROUND -- Software in the set-top box (STB) identifies persons (who it is, i.e. name) instead of just faces. INNOVATION -- Each person's face is tagged on the screen with the STB-recorded name (a training session has been done for each family member after purchase), and we just call out the names of people to be included. The rest is analogous to the Algorithm 1.

FORMAL MODELLING

OBJECT -- Space = Enclosed or otherwise well defined space.

EXAMPLES -- Living room, conference room, other room, open air space with defined camera-view-background

PROPERTIES -- Contains StaticObjects = objects (for example, furniture, plants, other static and distinct parts of the enclosure – e.g. windows, doors – of the Space) which are static during a VideoTelephonySession.

OBJECT -- Camera

EXAMPLES -- Camera on top of, or associated with the Appliance = teleconferencing system, personal computer, two-way-TV, Internet+TV, set-top box, or other video-telephony-capable device/appliance/CPE.

PROPERTIES --

BuildStaticModel = Periodically scans the Space and builds the model of the Space and StaticObjects contained in it. This is taking place as an invisible, background process relative to the content being (dis)played on the Appliance. Minimal model is 2D floorplan. Full scale model is a VR model.

DrawStaticModel = Displays StaticModel with all StaticObjects depicted. Viewpoints for

DrawStaticModel are from the Camera, from the

This display is rendered on the full screen in a "traffic sign orientation" mode – i.e. Appliance is on top, StaticObject below it -

DefaultStaticObject designated distinctly as such.

LocatePerson(s) = Locates faces of Person(s) in the Space.

RECEIVED

OBJECT -- DefaultStaticObject = When Camera first powered up and in default position, the closest object along Camera's centerline.

EXAMPLES -- Center of the sofa in front of TV; nominal chair location at PC workstation.

PROPERTIES -- Viewer can designate any StaticObject

OBJECT -- RemoteController = ??

OBJECT -- Person(s) = person(s) taking part in the VideoTelephonySession; situated in the Space which contains Appliance (see below).

EXAMPLES -- person(s) in the living room

OBJECT -- DefaultPerson = Person located at (for example, sitting on) the DefaultStaticObject.

BUSINESS ADVANTAGES TO TI

Filing this patent will secure an important piece of IP in STB -- one of the triplet of businesses lead by Eric Dewannain in the BB Cable BU. C6 is important part in STB's SmartCam and VideoPhone functions. This kind of IP protects TI's position in value add features.

DATE WHEN INVENTION FIRST CONCIEVED

--- Texas Instruments, Inc. - Center III, 8330 LBJ FWY, MS 8373, Dallas, TX 75243

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